ABSTRACT OF THE DISCLOSURE

Ethanol is dehydrogenated in the presence of hydrogen over a dehydrogenation catalyst, for example, a copper on silica catalyst. The liquefiable products present in the resulting intermediate reaction product mixture are selectively hydrogenated over a suitable catalyst, such as 5% ruthenium on carbon, so as selectively to hydrogenate reactive carbonyl-containing by-products to the corresponding alcohols. Butan-2-one and n-butyraldehyde are thereby hydrogenated to 2-butanol and n-butanol respectively. A two stage distillation procedure is then used to purify the selectively hydrogenated product. A first distillate of ethyl acetate, ethanol and water produced in the first distillation zone is redistilled in the second distillation zone, thereby producing a bottom product comprising, typically, from about 99.8 mol % to about 99.95 mol % ethyl acetate and an overhead second distillate, which has a different composition from that produced in the first distillation zone and which is returned to the first distillation zone.